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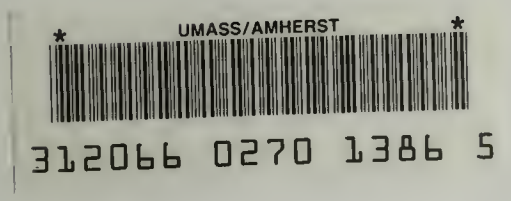
Massachusetts Board of Registration in Pharmacy Medication Error Study



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Introduction

Medication error studies have been conducted for more than 30 years. The goals of a comprehensive study of medication errors should:

- measure the medication error rates in given environments;
- compare medication administration accuracy rates associated with different drug distribution systems;
- identify causative factors associated with medication errors;
- evaluate the effectiveness of error prevention techniques.

A retrospective pilot study was undertaken by the Massachusetts Board of Registration in Pharmacy in an attempt to identify causative factors associated with medication errors. A survey instrument was designed to collect data from pharmacists and consumers regarding their perceptions as to the cause of the medication error in question. The data was collected from available medication error cases brought before the Massachusetts Board of Registration in Pharmacy between June 1996 and July 1997. Only those cases that provided a complete set of data on the survey questionnaire were utilized.

Objective

The Massachusetts Board of Registration in Pharmacy, under the direction of principal investigator, R. Rebecca Couris, M.S., R.Ph., (Assistant Professor of Pharmacy Practice at the Massachusetts College of Pharmacy and Allied Health Sciences, and Ph.D. candidate at Tufts University School of Nutrition Science and Policy), undertook a study to determine the impact of various factors on the incidence of medication errors made by practicing pharmacists in the state of Massachusetts.

Methods

A fifty question survey instrument was developed by the principal investigator (RRC) in cooperation with the Massachusetts Board of Registration in Pharmacy to examine factors associated with medication errors made by practicing pharmacists in the state of Massachusetts. The survey questionnaire incorporated factors deemed relevant by previous studies published in the literature to the occurrence of medication errors in the country. A representative sample of 51 registered pharmacists and the corresponding consumers were asked to participate in this study. These medication error cases, all involving ingestion, were brought before the Massachusetts Board of Registration in Pharmacy between June 1996 and July 1997.

Results

Forty-six of the 51 pharmacists involved in medication errors during this time period agreed to participate in the study. Thirty-four of these pharmacists provided valid data appropriate for statistical analysis.

Demographics

Demographic information from the sample revealed (Figures page 1):

- 41% were female and 59% were male;
- ages in years ranged from 25 and under (3%), 26-30 (12%),31-40 (43%), 41-50 (18%), and over 50 (24%);
- the year of graduation from pharmacy school by decades is represented by the following percents: 1950-1959 (9%), 1960-1969 (12%), 1970-1979 (17%), 1980-1989 (24%),1990-1997 (38%);
- job status encompassed floating (18%), manager of record (30%), part-time (9%), and full-time (43%);
- 6% were non-English speaking.

Prescription Information

Fisher's Exact Test found no statistically significant differences between the number of prescriptions filled on the day of the alleged incident versus a typical working day ($p>0.05$). The study indicated that 63% of the errors were made filling new prescriptions while 37% were made on refills. Handwritten prescriptions accounted for 45% of errors and 37% of errors were made on prescriptions phoned into the pharmacy. In addition, the dispensing of incorrect drugs and/or incorrect strengths accounted for 88% of errors made. Fisher's Exact Test revealed no statistically significant difference in dispensing errors due to incorrect drug and/or incorrect strength between new and refill prescriptions ($p>0.05$). (Figures page 2)

Reasons for Prescription Errors

The study revealed that pharmacists perceived the following as causative factors for medication errors (Figures page 3):

- too many telephone calls (62%);
- overload/unusually busy day (59%);
- too many customers (53%);
- lack of concentration (41%);
- no one available to double check (41%);
- staff shortage (32%);
- similar drug names (29%);
- no time to counsel (29%);
- illegible prescription (26%);
- and misinterpreted prescription (24%).

Chi-square Test of Independence revealed statistically significant associations between an overload/unusually busy day to the volume of telephone calls ($p<0.01$) and volume of customers ($p<0.01$). Lack of concentration was also significantly associated with an overload/unusually busy day ($p<0.05$).

Prescription Fill Process

Chi-square test of two proportions found that significantly more pharmacists were involved with the prescription fill process on the day of the incident versus a typical day (Figures page 4):

- selecting the medication from the shelf 76% versus 41% ($p<0.05$);
- counting the medication 62% versus 4% ($p<0.0001$);
- and placing the medication in the bottle 62% versus 19% ($p<0.01$).

In contrast there were significantly fewer support staff (technicians/interns) available to perform these same tasks on the day of the incident versus a typical day (Figures page 4):

- selecting the medication from the shelf 24% versus 59% ($p<0.05$);
- counting the medication 38% versus 96% ($p<0.0001$);
- and placing the medication in the bottle 38% versus 81% ($p<0.01$).

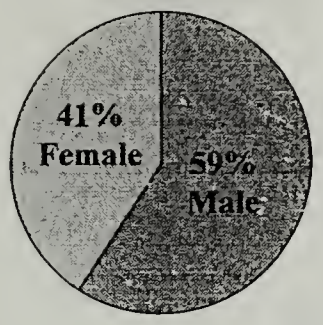
Counseling

Pharmacists reported that an offer to counsel was made 88% of the time. However, no counseling was performed 65% of the time because pharmacists reported that patients refused counseling. (Figures page 5)

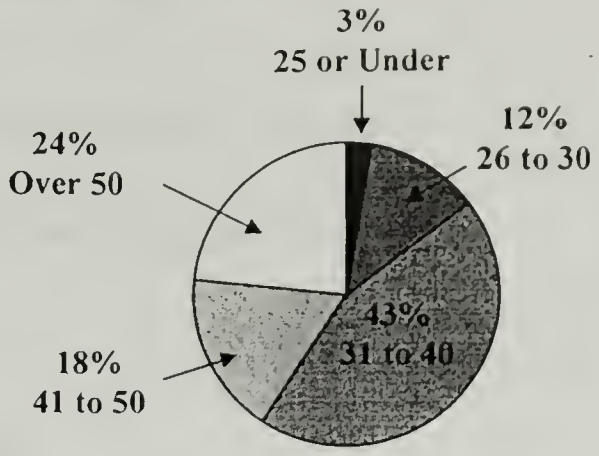
Conclusion

Despite the limitation of sample size, valid and valuable information was obtained from this pilot study concerning medication errors. In fact, the study found that 88% of medication errors were due to wrong drug and/or wrong strength. This is in concert with national statistics. No statistically significant difference was found regarding the number of prescriptions filled on the day of the incident versus a typical day. However, pharmacists perceived that they were significantly busier on the day of the incident reporting that they were more involved in the mechanical prescription preparation processes than usual. They also reported that there were significantly fewer supportive personnel available on the day the medication error occurred. In addition, medication errors were more likely to occur when pharmacists reported being understaffed. Therefore, a closer examination of staffing and appropriate pharmacist to technician/intern ratios should be included in future studies. In conclusion, additional research is warranted for a more comprehensive investigation of medication errors. Leaders of the pharmacy profession should encourage and support prospective research in this area to establish new standards for optimal patient care.

Demographic Information (n = 34)

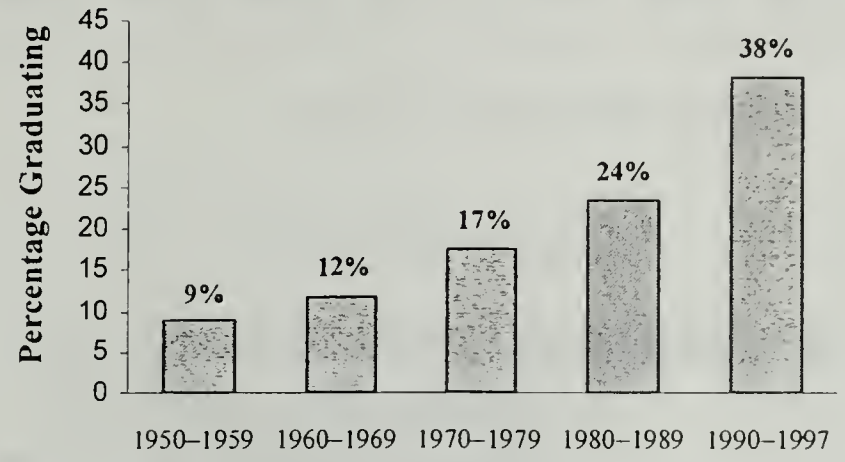


Gender

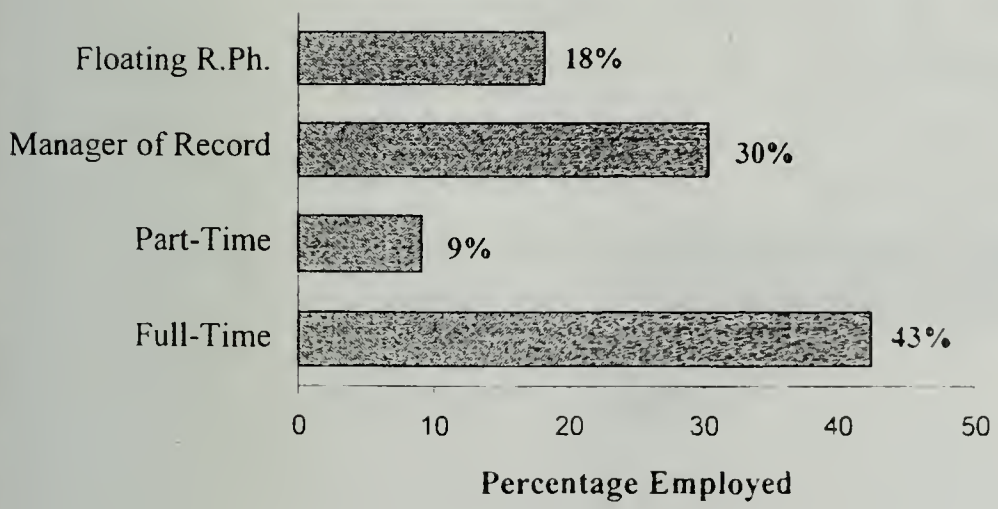


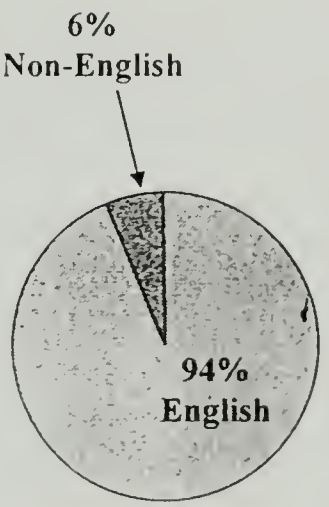
Age

Year of Graduation From Pharmacy School



Job Status

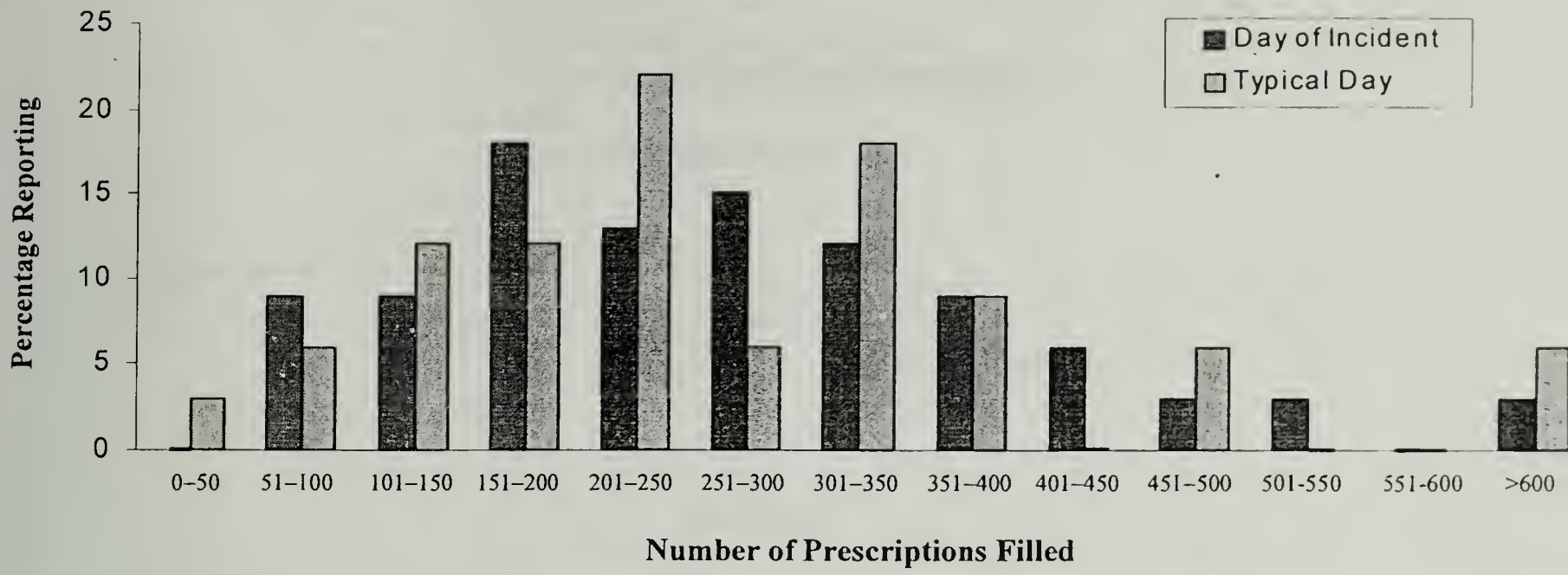




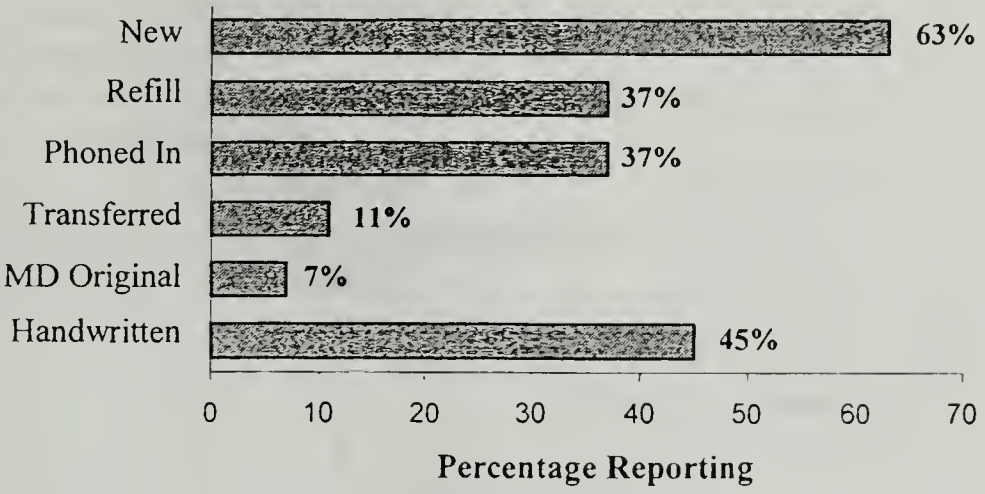
Language Spoken

Prescription Information

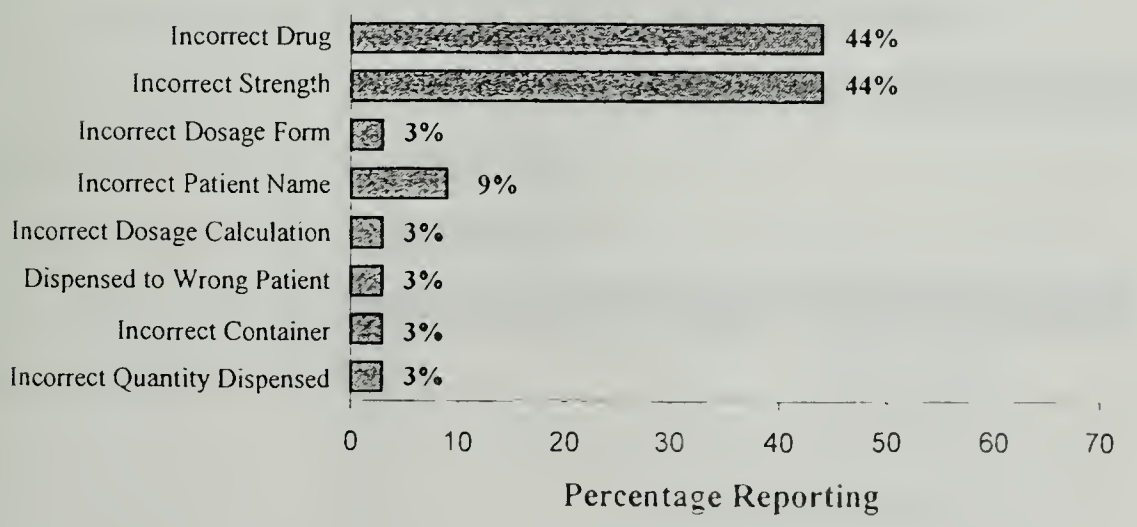
Number of Prescriptions Filled on the Day of Error Versus Number of Prescriptions Filled on a Typical Day



Type of Prescription

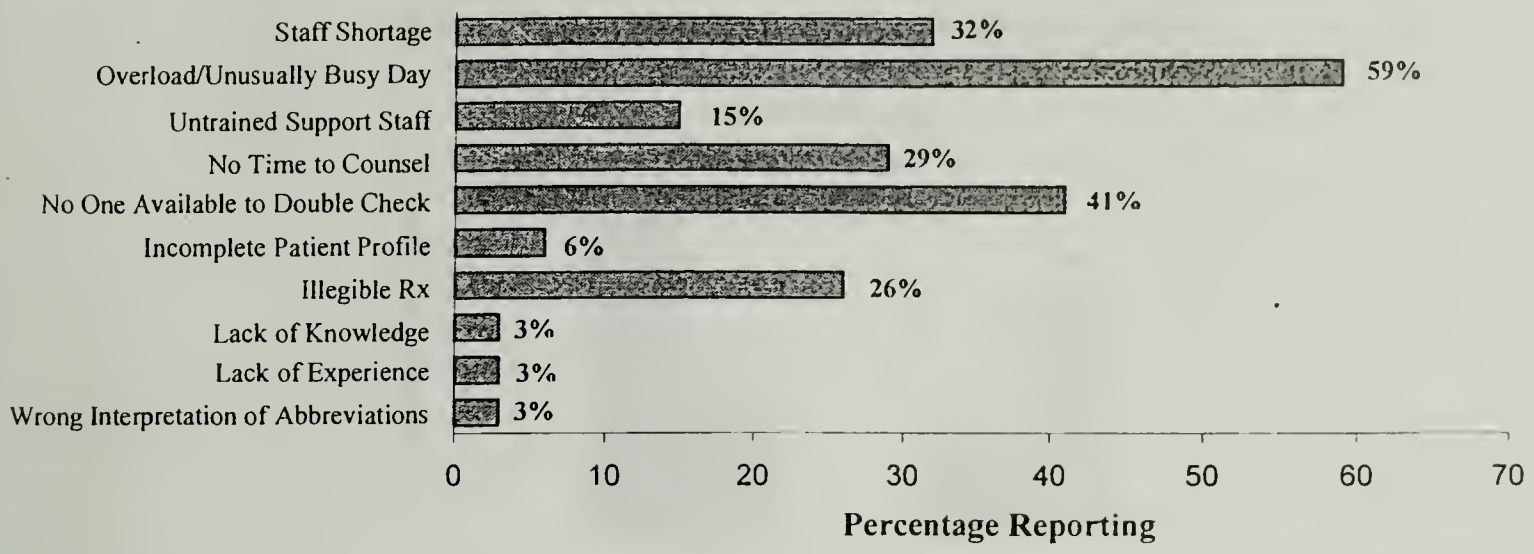


Type of Error

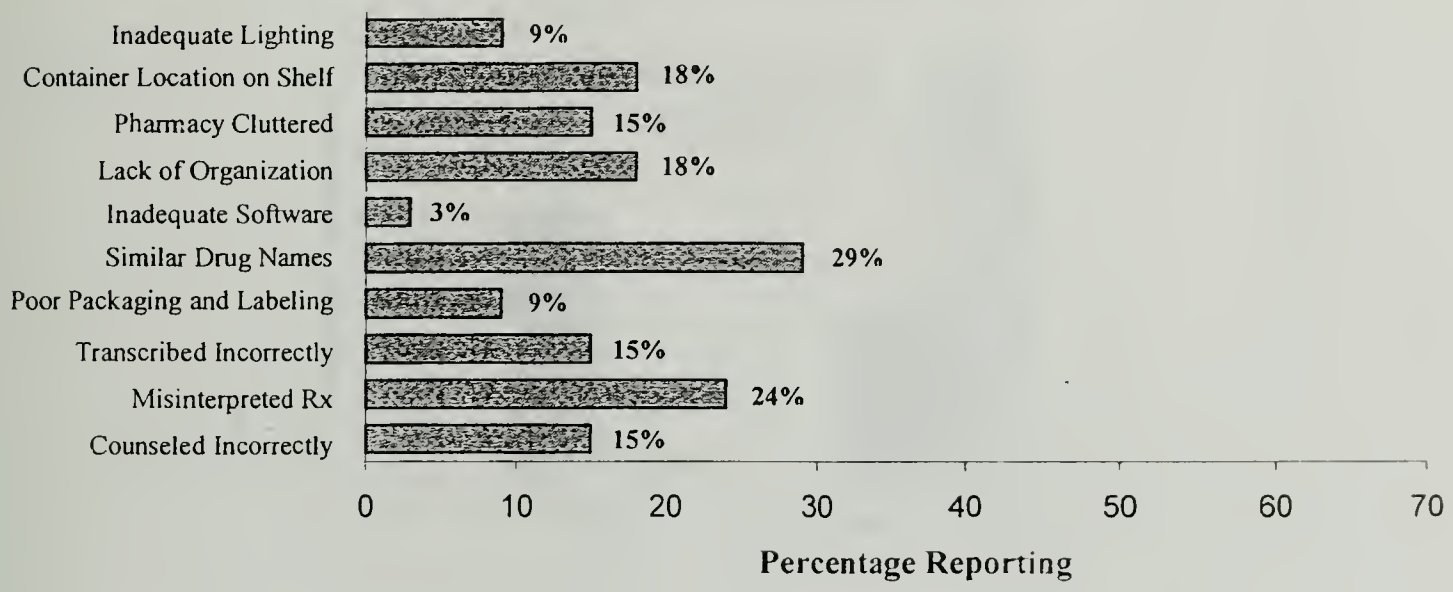


Reasons For Prescription Error

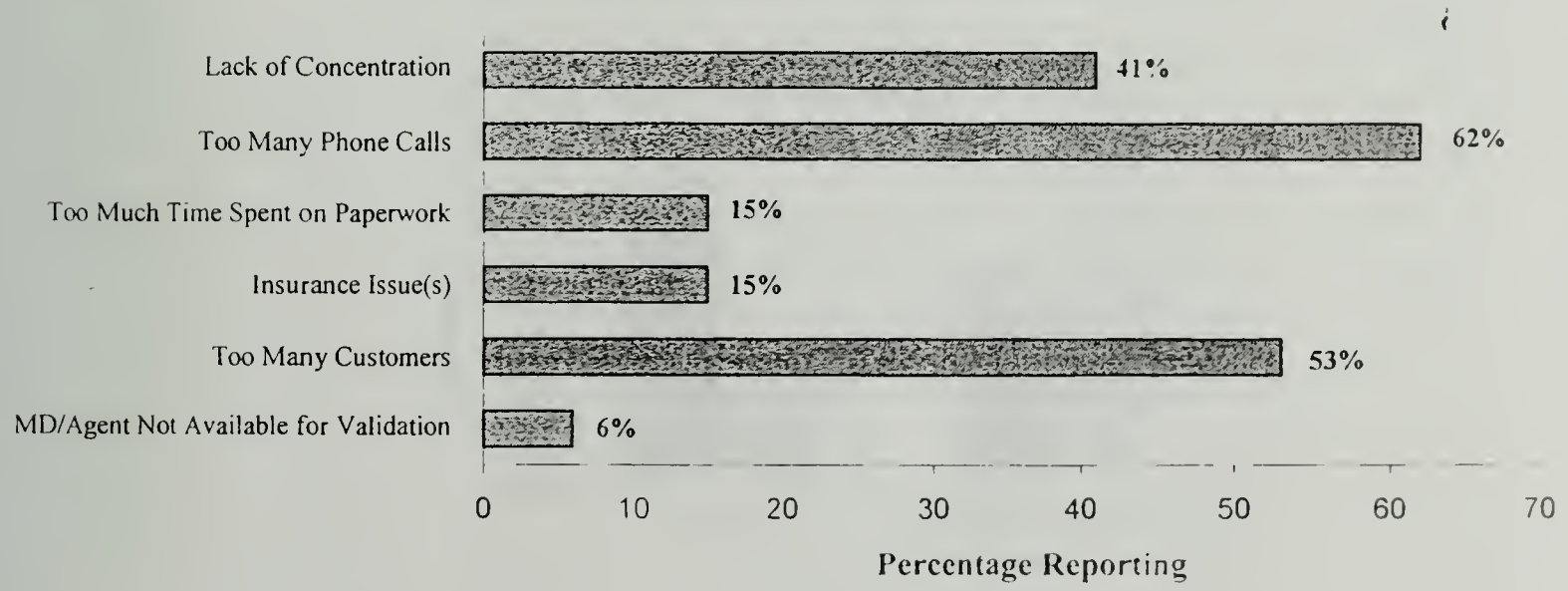
Category 1



Category 2

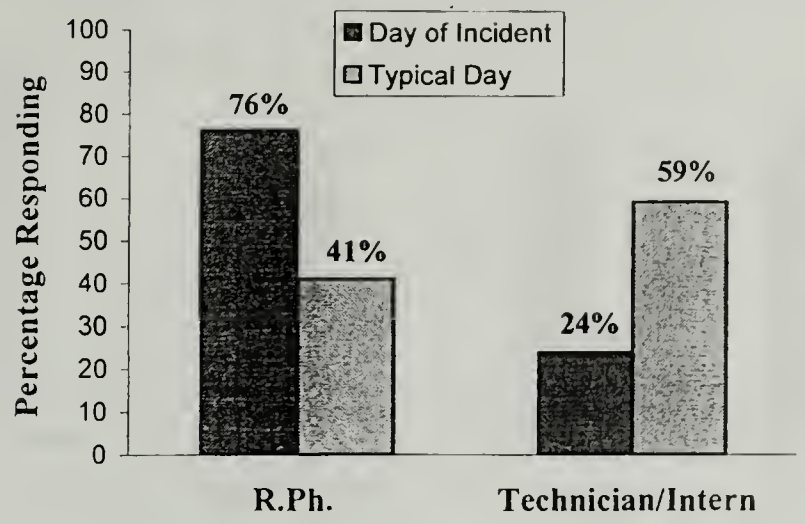


Category 3

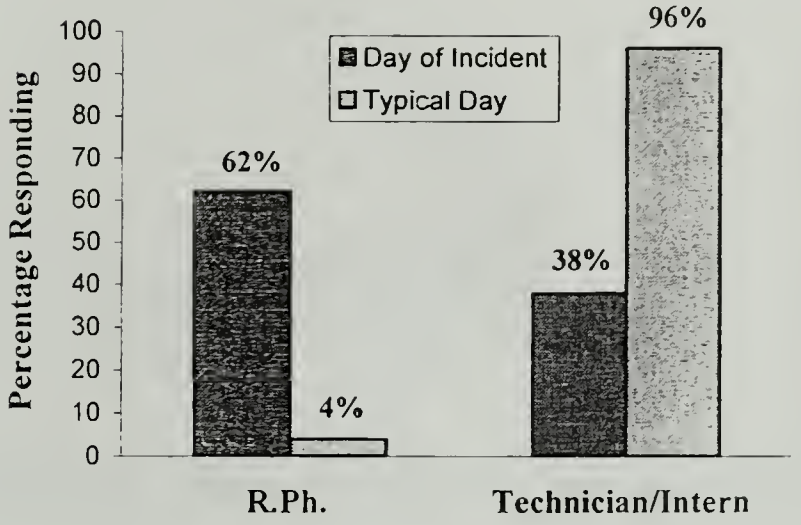


Prescription Fill Process

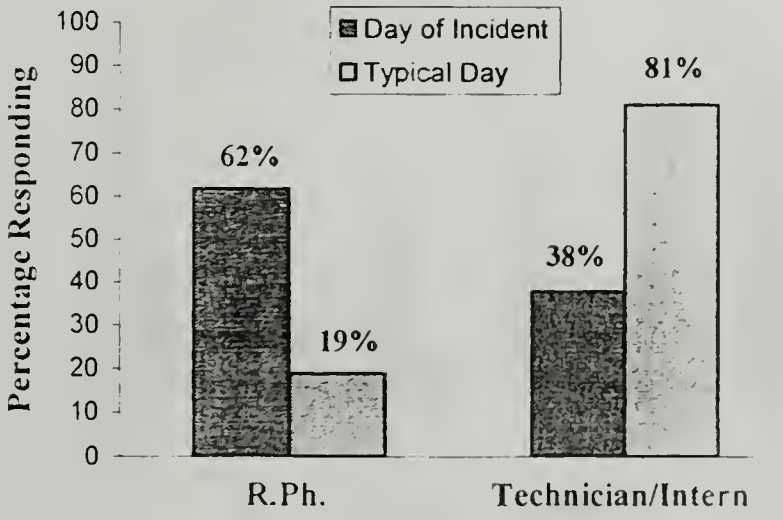
Who Picks the Medication from the Shelf?



Who Counts the Medication?

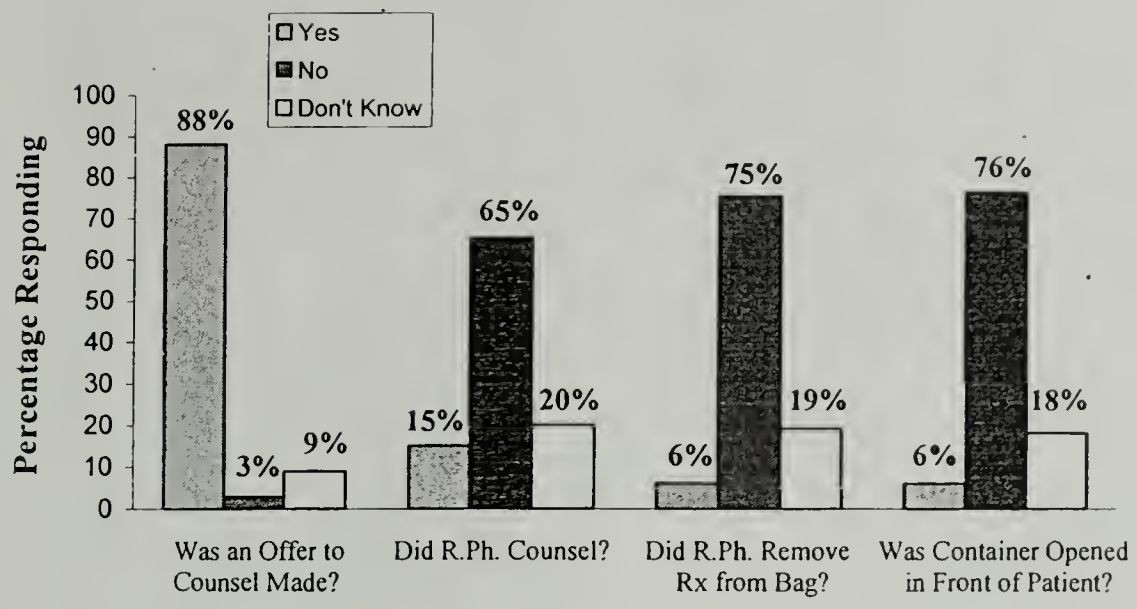


Who Places the Medication in the Bottle?

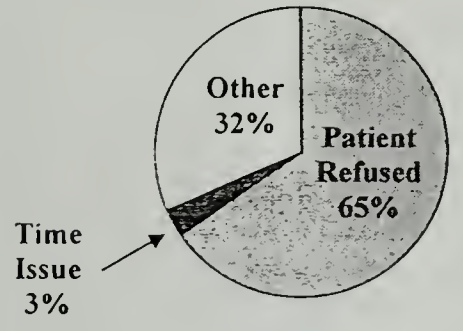


Counseling and Staffing

Counseling Issues



If No Counseling Was Done, Why?



Pharmacy Staff at the Time of the Alleged Incident